

What is claimed is:

1. An aqueous polishing slurry suitable for chemical mechanical polishing semiconductor substrates, comprising, by weight percent:

0.1 to 40 weight percent metal oxide particles, the metal oxide particles having a surface and a positive surface charge;

at least 0.001 polynaphthalene surfactant for adsorption with at least a portion of the surface of the metal oxide particles in situ and for reducing scratching of the semiconductor substrates; and

a balance of water with the slurry having a pH of less than 10.

2. The aqueous polishing slurry of claim 1 wherein the metal oxide particles comprise an abrasive oxide selected from the group comprising alumina, aluminum hydroxide oxide, ceria, iron oxide, lanthanum oxide, magnesium oxide, nickel oxide, silica, titania, yttria and zirconia.

3. The aqueous polishing slurry of claim 1 wherein the metal oxide particles are alumina.

✓

4. An aqueous polishing slurry suitable for chemical mechanical polishing semiconductor substrates, comprising, by weight percent:

0.25 to 25 weight percent metal oxide particles, the metal oxide particles having a surface and a positive surface charge and the metal oxide particles comprising an abrasive oxide selected from the group comprising alumina, aluminum hydroxide oxide, ceria, iron oxide, lanthanum oxide, magnesium oxide, nickel oxide, silica, titania, yttria and zirconia;

at least 0.01 polynaphthalene surfactant for adsorption with at least a portion of the surface of the metal oxide particles in situ and for reducing scratching of the semiconductor substrates; and

a balance of water with the slurry having a pH of less than 5.

5. The aqueous polishing slurry of claim 4 wherein the metal oxide particles are alumina.

6. An aqueous polishing slurry suitable for chemical mechanical polishing semiconductor substrates, comprising, by weight percent:

0.5 to 15 weight percent metal oxide particles, the metal oxide particles having a surface and a positive surface charge and the metal oxide particles comprising an abrasive oxide selected from the group comprising alumina, aluminum hydroxide oxide, ceria, iron oxide, lanthanum oxide, magnesium oxide, nickel oxide, silica, titania, yttria and zirconia;

at least 0.05 to 5 sulfonated polynaphthalene surfactant for adsorption with at least a portion of the surface of the metal oxide particles in situ and for reducing scratching of the semiconductor substrates; and

a balance of water with the slurry having a pH of less than 4.

7. The aqueous polishing slurry of claim 6 wherein the metal oxide particles are alumina.

8. A method of chemical mechanical polishing a semiconductor substrate comprising polishing with an aqueous polishing slurry comprising, by weight percent, 0.1 to 40 weight percent metal oxide particles, the metal oxide particles having a surface and a positive surface charge; at least 0.001 polynaphthalene surfactant for adsorption with at least a portion of the surface of the metal oxide particles in situ and for reducing scratching of the semiconductor substrates; and a balance of water with the slurry having a pH of less than 10.

9. The method of claim 8 wherein the chemical mechanical polishing removes a noble metal.

10. The method of claim 9 wherein the polishing includes the polishing slurry comprising 0.5 to 15 weight percent metal oxide particles, the metal oxide particles having a surface and a positive surface charge and the metal oxide particles comprising alumina; at least 0.05 to 5 polynaphthalene surfactant for adsorption with at least a portion of the surface of the metal oxide particles in situ and for reducing scratching of the semiconductor substrates; and a balance of water with the slurry having a pH of less than 4.